Low preparedness for food allergy as perceived by school staff: a EuroPrevall survey across Europe

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LOW PREPAREDNESS FOR FOOD ALLERGY AS PERCEIVED BY SCHOOL STAFF: A EUROPREVALL SURVEY ACROSS EUROPE

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Clinical implication: The study shows the need for clinicians, academicians and regulatory or school agencies to evaluate, establish or improve school procedures and preparedness to prevent accidental ingestion and promote prompt emergency care for students with food allergy.

Keywords: children, epinephrine, EuroPrevall, food allergy, preparedness, schools

Abbreviations:

AAAAI = American Academy of Allergy, Asthma, and Immunology

ASCIA = Australasian Society of Clinical Immunology and Allergy

To the editor,

It has been reported that 16-18% of children with food allergy experienced a reaction at school.[1, 2] According to a UK survey, 61% of schools had at least one child at risk of anaphylaxis.[3] Our study assessed the preparedness in dealing with symptoms of food allergy as perceived by school staff in eight different countries across Europe.

This was a cross-sectional multicentre study that was part of the European Union funded integrated project EuroPrevall.[4, 5] One of the aims of the EuroPrevall project was to estimate the prevalence of food allergy in children aged 7-10 years across Europe. For this purpose, research partners from eight European cities (Athens, Greece; Lodz, Poland; Madrid, Spain; Reykjavik, Iceland; Utrecht, the Netherlands; Sofia, Bulgaria; Vilnius, Lithuania; Zurich, Switzerland), randomly selected primary schools from that city. The same schools took part in the survey on school preparedness for food allergy, as described in this paper. For the school preparedness survey, a semi-structured questionnaire was designed. The questionnaire (Box EI, online repository) was administered to the most appropriate staff member in the school as advised by the head teacher, as it was felt that in this international setting where some schools had health care providers on site (such as school nurses), and others did not, best practice would be to let the head teacher selected the person most able to answer the questions. Ethical approval for the study was, where required, obtained through the appropriate committees.

Data analyses were based on 3 major categories of interest based on guidelines of the American Academy of Allergy, Asthma, and Immunology (AAAAI)[6] and Australasian Society of Clinical Immunology and Allergy Anaphylaxis Working Party (ASCIA)[7] namely: 1) identification of children with food allergy; 2) avoidance strategies creating a safe environment for children with food allergy; and 3) treatment strategies educating staff about food allergy and how to recognise an allergic reaction and administer epinephrine; having a written emergency treatment plan in place; and having epinephrine available on site.

Out of 249 randomly selected schools, 190 (76%) agreed to participate. The response rates ranged between 43%-100%: Madrid (43%), Reykjavik (65%), Zürich (85%), Utrecht (88%), Vilnius (93%), Sofia (100%), Lodz (100%), Athens (100%). Overall, 70% of the surveys were filled in by (head) teachers, 27% by health care givers (school nurse, other), 3% by other school personnel. In the individual centres in each country it was almost always the same professional who was the main respondent to the survey, either the teacher (Zürich, Madrid, Athens, Utrecht) or the health care professional (Lodz, Sofia, Vilnius, Reykjavik).

The percentage of schools with staff being aware of the presence of (at least 1) food allergic child/children at their school in the past 3 years ranged between 12%-100% across Europe (Table E1, online repository). Athens had low awareness (12%), but the awareness of food allergy was

high in the other schools (72%-100%). There was a moderate awareness of what sort of symptoms are associated with food allergy (Table 1). Skin symptoms were the most commonly listed (78%), followed by respiratory symptoms (47%), and gastrointestinal symptoms (34%). Seventy-four percent of schools stated that they identified pupils with any chronic condition or special medical need in the school (Table E1, online repository).

To create a safe environment for food allergic children, a "no-sharing" policy in schools is recommended by guidelines.[6-8] A "no-sharing" policy referred to whether or not children were prohibited from sharing or exchanging snacks or lunch with each other. Only 44% of schools had a "no-sharing" policy, ranging between 0% and 91% across the different centres (Table 1).

Only 23% of schools had staff educated to recognise signs and symptoms of food allergy (Table 1). Only in 17% of schools, members of staff were taught to read food labels for hidden ingredients. Written school health guidelines were available in only 72 schools (40%) and of these only 16 (22%, or 9% of all schools) included a section on food allergy. Only 26% of the schools had epinephrine available in the school (Table 1) and in these schools only 53% had staff that knew how to administer it. Given that in case of an acute severe food allergic reaction an injection of epinephrine is the only life-saving method, we considered the reported preference for injecting epinephrine in the event of a severe food allergic reaction low (11%) (Table 2).

Several deficits in the preparedness for food allergic reactions in the schools were revealed by this survey. Not all school staff knew what sort of symptoms are associated with food allergy. Very few schools had a "no-sharing" policy, had written policies including how to deal with food allergy or had staff that were educated on food allergy and reading labels. There was an overall low preference for injecting epinephrine in the event of a severe food allergic reaction. This is in line with previous studies that showed that epinephrine is often unavailable and that staff feel unconfident and often are not trained to administer it.[9, 10] The issue on the administration of epinephrine arises when there is no health personnel in schools, which is the case in the great majority. Additional analyses showed that there was a pattern that schools without a health care provider were less aware of food allergic children in the school, less likely to report symptoms, less likely to indicate appropriate pupil identification, and less likely to have adrenaline available. This indicates that in schools without health care providers, it is even more important to train the teachers.

We acknowledge that the individual knowledge of the interviewed staff member may not represent that of the whole school. However, we made all efforts to assure that the person interviewed would be the person who would be most suitable to answer the questions. We did this by explaining thoroughly the purpose of the study to the head teacher and let him/her select the appropriate member of staff.

To conclude, deficits revealed by this survey warrant the preparation of guidelines for a standardised approach to identifying children at risk and preventing and managing the effects of food allergies. These deficits may be even more prevalent in schools without health care providers. The cornerstones of management should include training of staff to improve understanding of food allergy and establishing management and emergency plans in order to minimize risks and to provide a safe educational environment. Our survey highlights that in many cases and in all investigated countries there is room for improvement of existing practices.

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Competing interests

None of the authors have competing interests to declare.

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Table 1: Avoidance and treatment strategies

Schools	**No-sharing policy**			**Education food allergy***			**Education to read labels†**			**Food allergy included in written school policy‡**			**Epinephrine available on site**		
	N‖	**n**	**%**	**N‖**	**n**	%	**N‖**	**n**	%	**N‖**	**n**	**%**	**N‖**	**n**	**%**
Zürich	31	0	0%	32	0	0%	29	1	3%	21	2	10%	31	1	3%
Utrecht	37	16	43%	37	5	14%	37	2	5%	5	0	0%	33	4	12%
Madrid	30	13	43%	30	14	46%	28	9	32%	5	1	20%	30	6	20%
Athens	34	31	91%	34	0	0%	34	3	9%	12	0	0%	33	0	0%
Sofia	14	4	29%	16	5	31%	14	3	21%	4	3	75%	15	13	87%
Lodz	11	4	36%	12	2	17%	10	4	40%	9	0	0%	12	9	75%
Vilnius	10	4	40%	13	6	46%	11	4	36%	9	4	44%	13	4	31%
Reykjavik	12	6	50%	13	11	85%	9	4	44%	7	6	86%	11	10	91%
All schools*†	179	78	44%	187	43	23%	172	30	17%	72	16	22%	178	47	26%

‡ Members of staff are educated to recognise signs and symptoms of food allergy

† Members of staff are taught how to read labels for hidden ingredients

‡ Data for schools that where there is a written school policy of how to tackle severe health events (n=72)

‖ Data missing for some schools

Table 2: Preferred plan of action if a child has a severe episode of food allergy in the school

Schools		**Contact parents**		**Contact GP**[†]		**Call emergency**		**Inject epinephrine**		**Wait and see**		**Other**[‡]	
	N*	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Zürich	28	16	57%	2	7%	8	29%	2	7%	0	0%	0	0%
Utrecht	33	3	9%	2	6%	0	0%	1	3%	0	0%	27	82%
Madrid	30	14	47%	2	7%	12	40%	1	3%	1	3%	0	0%
Athens	34	22	65%	0	0%	12	35%	0	0%	0	0%	0	0%
Sofia	14	5	36%	0	0%	6	43%	3	21%	0	0%	0	0%
Lodz	10	8	80%	0	0%	1	10%	1	10%	0	0%	0	0%
Vilnius	13	1	8%	0	0%	9	69%	3	23%	0	0%	0	0%
Reykjavik	12	2	17%	0	0%	2	17%	8	67%	0	0%	0	0%
All schools*	174	71	41%	6	3.5%	50	29%	19	11%	1	0.6%	27	16%

* Data missing for some schools

[†] General Practitioner (family doctor)

[‡] Not specified